

## ABSTRACT

PT XYZ is a company engaged in the textile industry. One of the machines used by PT XYZ is the Jet-Dyeing Machine. This Jet-Dyeing Machine is a dyeing machine that is used to color the fabric. Jet-Dyeing Machine has two systems, namely an electrical system and a mechanical system. The frequency of mechanical system damage occurred 149 times compared to electrical systems which only occurred 8 times so that the risk of the costs borne by the company was quite large, namely Rp. 223,129,014 per year. Therefore, it is necessary to have optimal maintenance activities to reduce risks and costs due to unreliability. The mechanical system has 5 subsystems, namely valve, driving reel, heat exchanger, valve nozzle, and circulation pump. Of the five subsystems, critical subsystems are selected using the risk matrix. Based on the risk matrix, three subsystems are selected which have the highest criticality level, namely valves, heat exchangers and driving reels. After the critical subsystem is selected, to determine the risk and optimal maintenance time interval using the Risk Based Maintenance (RBM) method and calculate the cost of machine unreliability using the Cost of Unreliability (COUR) method. The results of the calculation of the RBM method obtained a risk value of Rp 201,209,150.43 with a percentage of 0.37%. The risk percentage can be reduced by making a maintenance interval proposal, the proposed treatment time interval can reduce the risk by Rp. 53,108,53376. For the calculation of the COUR method, the losses from repair activities amounted to Rp. 1,434,111,294.34 over the last 7 years and Rp. 2,494,307,28975 losses from machine downtime over the past 7 years.

**Keyword:** *Risk Matrix, Risk Based Maintenance, Cost of Unreliability, Maintenance Schedule, Preventive Maintenance*